

DEM Design. Engineering. Manufacture.

“Supporting the Steel Framing Industry”

UAE Labour Camp



Tel. +44 1423 535650

Tel. +44 1423888291

Tel. +44 1423500211

“Supporting the Steel Framing Industry”

DEM is the combination of the knowledge of three well established companies that are working together to make the transition to using Light Gauge Steel Construction easier to handle.

Hill Cannon (UK) LLP

Hill Cannon (UK) LLP are a leading Civil and Structural Engineering Consultancy which have been in practice for over forty years. They have a dedicated Modern Methods Department which is at the cutting edge of Light Steel Framing design, with over ten years experience in the area, as well as other MMC methods. The Modern Methods Department, with the SCI, is already developing designs to the upcoming Eurocodes (EC3, due out in March 2010) to gain the most competitive advantage they can for you, our client.

Howick Ltd.

Howick have been building rollforming equipment for over 30 Years. Their focused Framing Machines are designed to quickly produce accurate load bearing frames that allow the production of multi story structures.

Howick offer a customisation of tooling to suit your specific needs where required.

Vertex

Vertex is the leading building design software that allows full design of all components from the foundation to the walls, floors and roof design. Design is made easy with various automated features as well as a library of building components that allow the designer a high degree of flexibility to take both the exterior and interior to a fully finished state including furnishings. Vertex then has an automated and custom link to the Howick Rollforming machine to turn accurate



building design into accurate production.

What can DEM do for you?

We don't propose we do all the work for you but we do make three of the largest components of your business easier. By offering our knowledge in each of our specialist areas.

The three main Questions we do answer are.

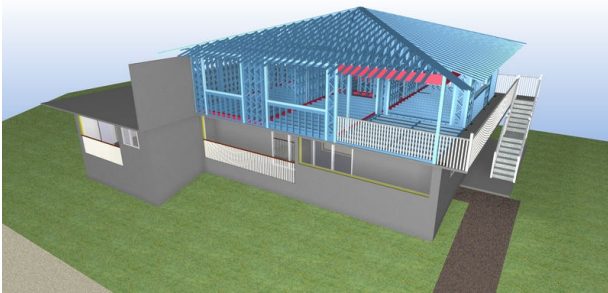
How do I take those initial plans from concept to production ready designs.

How do I make sure the designs meet the required standards and codes.

How do I produce the framing components and what equipment do I need.

Typical offering from DEM

Vertex supply the software, Technical Support and Training for the use of their software package.
As required additional customisation of the software is available for the optimisation of your system as it evolves.



Hill Cannon supply technical manuals that include the standard details needed to correctly finish the structure to building standards such as NHBC Chapter 6.10 and SCI P301. (Sample Pages Below.)

Structural and Building Physics Performance

5.5 Typical Applications in Buildings

5.5.1 Application - Wall Frames

Wall frames are manufactured as 3-dimensional panels consisting of:

- Walls (generically considered at 100 or 200 mm centres, or as specified in drawings)
- Beams and top rails which fit against the walls.
- Rafters (and soffits) placed at half height of the wall to provide lateral restraint.
- Bracing (either as integral I-sections between the studs or as extra bars fixed normally to the walls) (see Figure 4.1).

Figure 4.1 Wall frame construction

Wallwork is considered by wall ties located in vertical framing members which do not provide a significant out-of-phase. The density of wall ties required is a minimum of 3 ties/m², with no change about vertically at 1000mm centres with wall ties at minimum vertical spacing of 270mm (plus 10mm tolerance to 220mm at openings)

4.3 Other bracing systems

A variety of bracing systems may be used such as stabilised render. Two alternative systems may be selected, non-combustible and combustible. The difference being detailed in Figure 4.2 and Figure 4.3. EN1996 requires the use of a safety system in framing, although the necessary system has performance level 3 or level 4.

Minimum DPMs, barriers etc as follows:

Walls	30mm
Render	50mm
Other buildings	30mm

Figure 4.2 Interaction with Internal Partitions

Wall frames are usually designed to bear beams, and also to resist wind loads when used on the exterior of the building.

5.5.2 Application - wall beds

Wall beds are used in multi-storey buildings either as:

- Supporting walls for acoustic, insulation and fire compartmentation.
- External walls as a weathering system.

They are not subject to significant vertical loads, but may be exposed to high wind loads depending on the building location and height.

Generally, 15 mm deep D-sections are used for floor ceiling heights of up to 3.0m (see also the section on this building). Figure 4.3 shows a typical wall bed located between floors. The spacing of the wall bed for which the blockwork depends on the wind load (see building elevation and section). The minimum requirement is 3.75 blocks/m². Blockwork should generally be mechanically supported. (See also the wall bed section in Section 2.)

Structural and Building Physics Performance

Figure 4.2 Wall bed construction

Blockwork is considered by wall ties located in vertical framing members which do not provide a significant out-of-phase. The density of wall ties required is a minimum of 3 ties/m², with no change about vertically at 1000mm centres with wall ties at minimum vertical spacing of 270mm (plus 10mm tolerance to 220mm at openings)

4.3 Other bracing systems

A variety of bracing systems may be used such as stabilised render. Two alternative systems may be selected, non-combustible and combustible. The difference being detailed in Figure 4.2 and Figure 4.3. EN1996 requires the use of a safety system in framing, although the necessary system has performance level 3 or level 4.

Minimum DPMs, barriers etc as follows:

Walls	30mm
Render	50mm
Other buildings	30mm

HILL CANNON

GENERAL SERVICE DESIGN

PROJECT NO: 10/10/08
CLIENT: Hill Cannon
DATE: 27/10/08
SCALE: 1:100

LINTEL DESIGN

LINTEL ABOVE TOP DRAINING P-FLOOR

200mm wide of wall bed	Yes	1 x 120mm
100mm Z-spacing	Yes	1 x 120mm
Steel bed support beams	Yes	1 x 120mm
Line fasteners to beam	Yes	1 x 120mm
Structural support to steel beams	Yes	1 x 120mm
Total cost to steel beams	Yes	1 x 120mm

BASED ON THE 200mm wide of wall bed

Blockwork	1.0m ²	1.0m ²
Structural steel beams	1.0m ²	1.0m ²
Line fasteners to steel beams	1.0m ²	1.0m ²
Structural support to steel beams	1.0m ²	1.0m ²
Total cost to steel beams	1.0m ²	1.0m ²

Strength

Max. moment	1.0m ²	1.0m ²
Max. shear	1.0m ²	1.0m ²
Max. deflection	1.0m ²	1.0m ²
Max. vibration	1.0m ²	1.0m ²

Other notes:

- See the drawing for details of the lintel and its connection to the wall bed.
- See the drawing for details of the lintel and its connection to the wall bed.

As well as offering complete structural calculations for the project, including above and below ground works, thus offering a one stop solution for the whole project.

Howick supply the frame making machinery for producing walls floors and truss components. Along with the training and support needed to help companies new to the processes involved in producing their own framing components.



Hill Cannon
01423 535650
www.hillcannon.com
Contact: Steve Napper

Howick Ltd
01423 888291
www.howickltd.com
Contact: Nick Coubray

Vertex UK
01423 500211
http://uk.vertex.fi
Contact: Jouni Kyllonen

“Supporting the Steel Framing Industry”

DEM Package 1 (Low Rise)

- 2 Seats Vertex BD FRAMER.
- Vertex Training (3 days), Technical Support and 1st years maintenance.*
- SCI Technical manual.
- Standard Details Documentation.
- 75 Hours of Engineering consultancy from Hill Cannon (UK) LLP including 1 UK Site visit / attendance of a design meeting.
- Indicative design cost estimation documents.
- Howick 89mm or 100mm H500 Framing machine and Decoiler installed and operator training provided.
- 2 additional visits to your site by a Howick technician for additional training and maintenance.**

DEM Package 2 (Medium Rise)

- 2 Seats Vertex BD Pro.
- Vertex Training (4 Days), Technical Support and 1st years maintenance.*
- SCI Technical manual.
- Standard Details Documentation.
- Indicative design cost estimation documents.
- 110 Hours of Engineering consultancy from Hill Cannon (UK) LLP including 1 European Site visit / attendance of a design meeting.
- Howick 89mm or 100mm H500 Framing Machine and Decoiler installed and operator training provided.
- Howick 150mm H500 Framing Machine and Decoiler installed and operator training provided.
- 2 additional visits to your site by a Howick technician for additional training and maintenance.**

DEM Package 3 (Medium Rise)

- 2 Seats Vertex BD Pro Including G4 add on.
- Vertex Training (4 + 2 Days), Technical Support and 1st years maintenance.*
- SCI Technical manual including Floor Joist.
- Standard Details Documentation.
- Indicative design cost estimation documents.
- 110 Hours of Engineering consultancy from Hill Cannon (UK) LLP including 2 European Site visits / attendance of design meetings.
- Howick 70 or 150mm H500 Framing machine and Decoiler installed and operator training provided.
- Howick 89mm or 100mm H500 Framing machine and Decoiler installed and operator training provided.
- Howick 250mm H600 Floor Cassette Machine and Decoiler installed and operator training provided.
- 2 additional visits to your site by a Howick technician for additional training and maintenance.**

Additional Options

- Vertex G4 package.
- Contract vertex design service.
- Additional Engineering Consultancy hours from Hill Cannon (UK) LLP.
- Howick maintenance contract.
- Additional Howick Machine tooling customisation.

*Training at Vertex's offices, training available onsite with Travel Costs additional.

**Travel and Parts additional.

Overview

Brief design appraisal has been carried out for a 2 storey residential building at a labour camp. “**Light steel framing panel construction**” is adopted for this design.

Panel construction: Wall panels, floor cassettes and roof trusses are prefabricated in a factory and later assembled on site.

Wall panels are assembled from cold formed lipped C-section studs spaced at 600mm centres (88.9x41.3x1.6 C-section at external wall and 88.9x41.3x1.2 C-section at internal wall). Floor to floor height to be 2.7 metres.

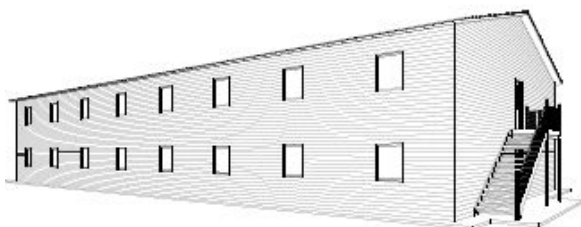
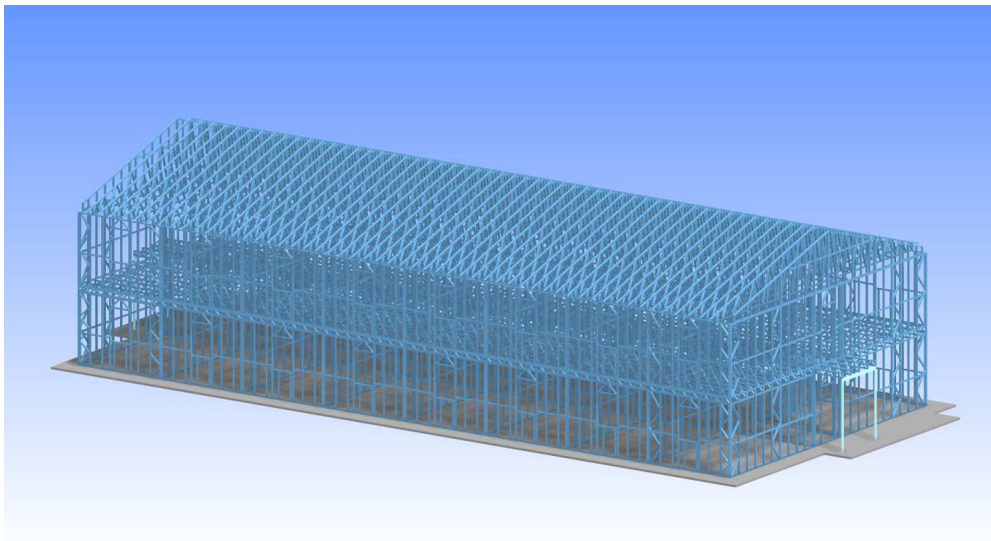
Floor cassettes consist of 200mm deep floor trusses spanning 4 metres at bedrooms and 2 metres at corridor. The floor truss is assembled from 88.9x41.3x1.2 C-section. The roof trusses consist of fink trusses assembled from similar C-section members. A chipboard floor and steel clad roof construction will be adopted.

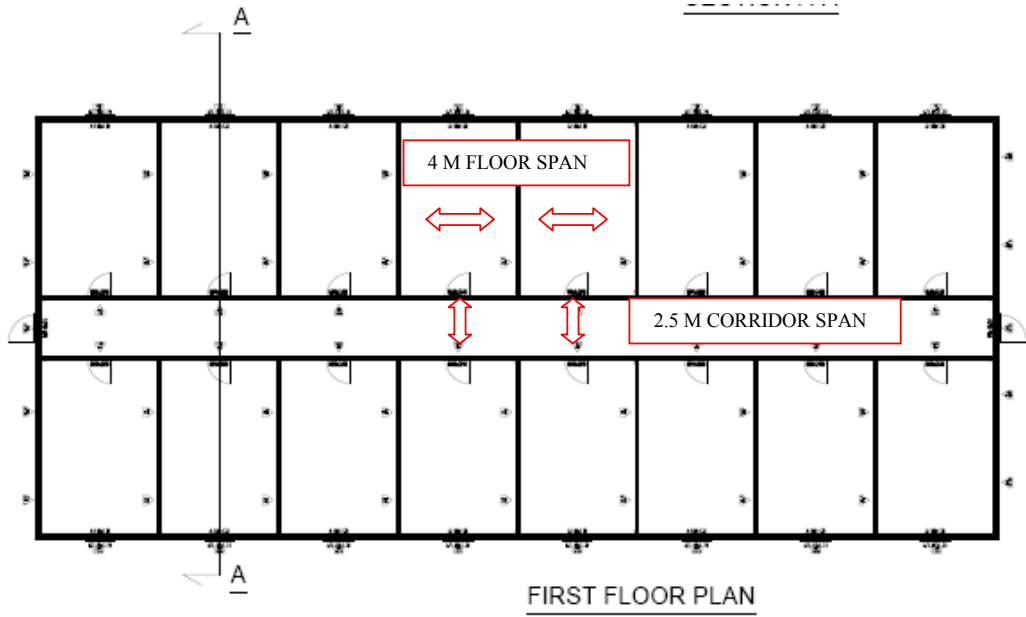
Some of the finishing materials may be applied in the factory, to speed on-site construction. Panels can comprise the steel elements alone or the facing materials and insulation can be applied in the factory. The panels are connected on site using conventional techniques (bolts or self drilling screws).

The main advantages of panel or sub-frame construction are:

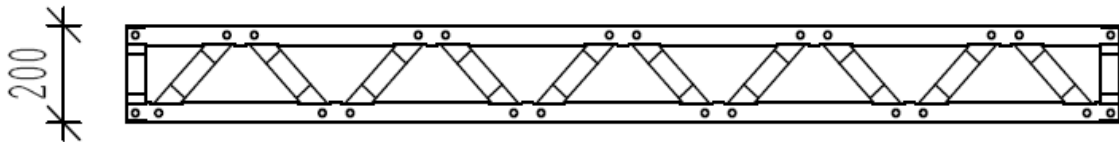
Speed of erection of the panels or sub-frames
Quality control in production, Reduced site labour costs
Scope for automation in factory production.

The geometrical accuracy and reliability of the panels and other components is better than with stick-build construction because panels are prefabricated in a factory environment. The accurate setting out and installation of foundations is a key factor to achieve rapid assembly of the panels and to obtain the maximum efficiency of the construction process.

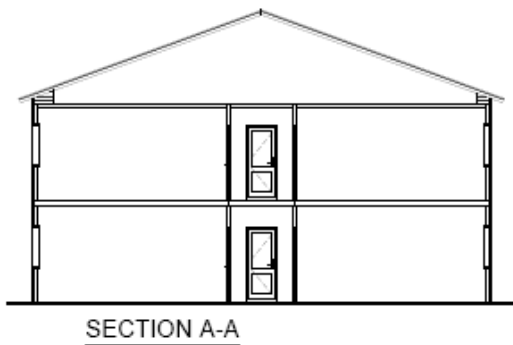


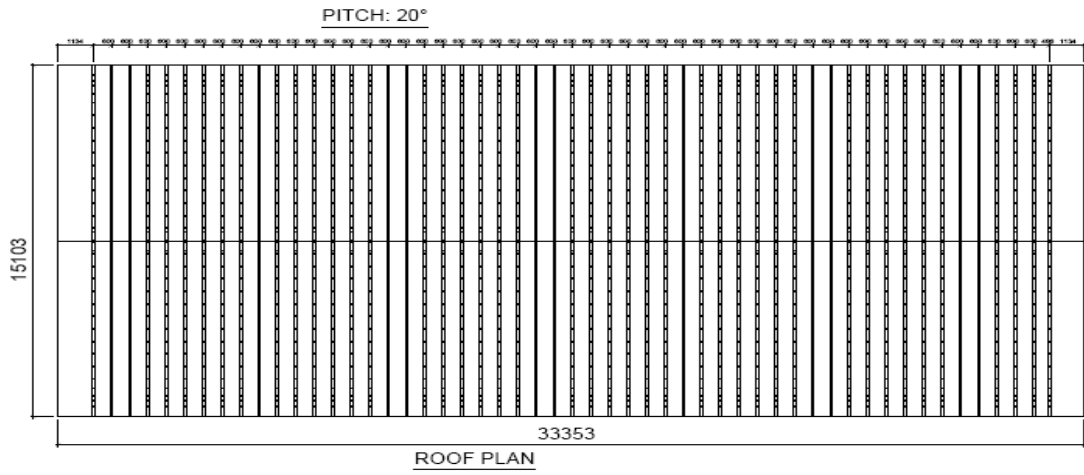


TYPICAL FLOOR LAYOUT

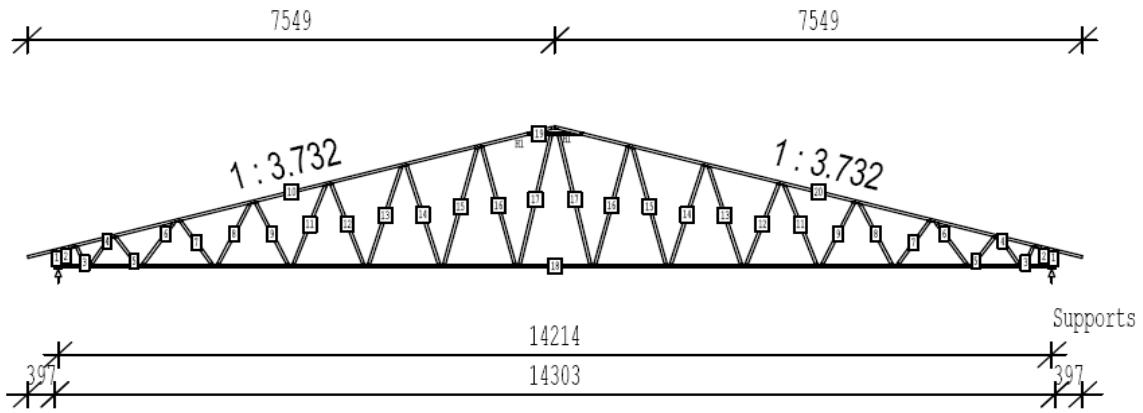


TYPICAL 200 DEEP FLOOR TRUSS ASSEMBLED FROM 88.9x41.3x1.2 C-SECTION



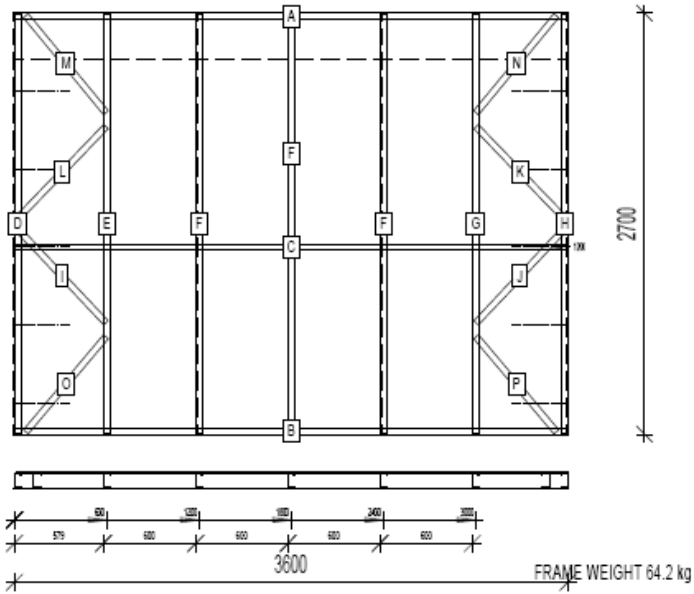


TYPICAL ROOF TRUSS LAYOUT PLAN

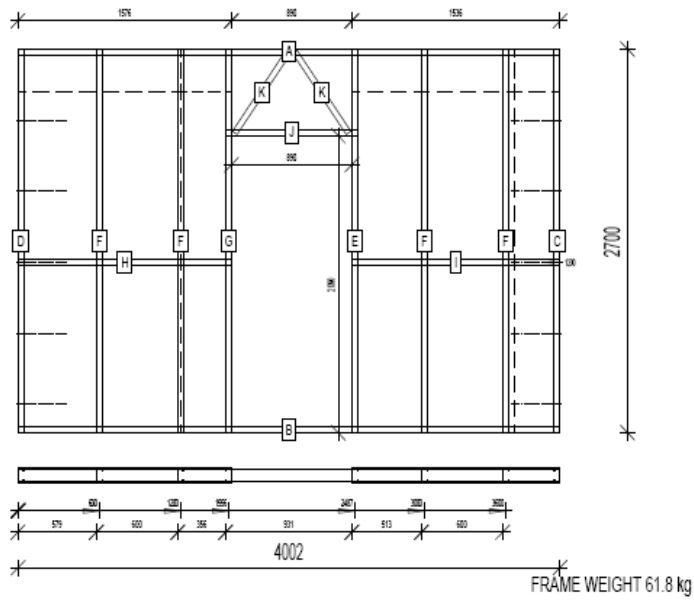


TYPICAL FINK TRUSS ASSEMBLED FROM C SECTION

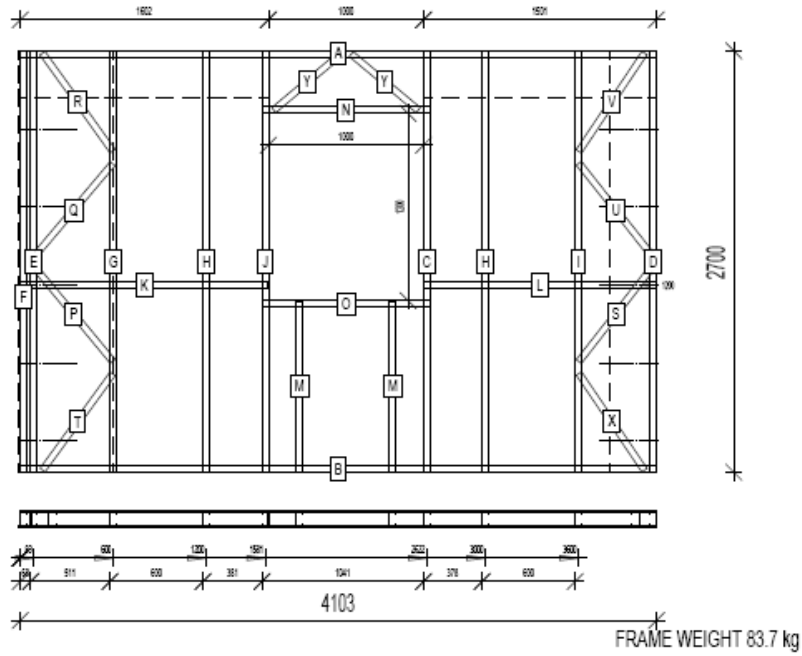
TYPICAL WALL PANEL TYPES:



1.0 TYPICAL BRACED WALL PANEL (88.9x41.3x1.2 STUDS SPACED @ 600C/C)



1.1 TYPICAL WALL PANEL WITH DOOR OPENING



1.2 TYPICAL WALL PANEL WITH WINDOW OPENINGS